

REMARKS/ARGUMENTS

Applicants provide herewith an amendment to the claims as described above. Support for the amendment to the claims is found in the specification as originally filed, and is further discussed below. Applicants submit that no new matter has been added by way of the above Amendment. Accordingly, entry of the Amendment is respectfully requested.

The Office Action dated March 26, 2007, included claim objections and rejections based on alleged indefiniteness (35 U.S.C. §112, second paragraph) and alleged anticipation (35 U.S.C. §102). Applicants traverse all rejections to the extent that they may be applied to the amended claims, for the reasons noted herein. The present Response with Amendment is fully responsive to each of the Examiner's points, and Applicants respectfully request reconsideration of the claims in view of the amendments and remarks herein.

THE STATUS OF THE CLAIMS

Following entry of the present amendment, Claims 1-31, 33-35, 37-39, 41-44 and new claims 45-47 are pending. Claims 31, 35, 36, 38, 38, 42 and 43 are amended herein. Claims 32, 37 and 40 are cancelled. This amendment to the claims introduces no new matter. These amendments are made without prejudice and are not to be construed as abandonment of any originally claimed subject matter or presently claimed subject matter or agreement with any objection or rejection of record.

Support for new claims 45-47 is found throughout the specification. For example:

Claim Number	Location of Support in the Specification
45	Throughout the specification, and see specifically paragraphs 0009 and 0056 .
46	See paragraphs 0006 , 0012 and 0077 .
47	See paragraphs 0006 , 0009 and 0114 .

CLAIM OBJECTIONS

The Examiner objected to claim 40 as allegedly being of improper dependent form. Solely for the purpose of advancing the prosecution of the present application, Applicants

have cancelled claim 40 in the present amendment, thereby rendering the objection moot. Applicants respectfully request withdrawal of the objection.

35 U.S.C. § 112, SECOND PARAGRAPH

In the Office Action, the Examiner rejected claim 33 under 35 U.S.C. § 112, second paragraph as indefinite. The Examiner states that the limitation “at least 75% identical to that of a wild-type therapeutic protein, a diagnostic protein, an industrial enzyme, or portion thereof” allegedly lacks proper antecedent basis because no sequences are provided in the application.

Applicants respectfully disagree, and traverse the rejection. The specification provides non-exhaustive lists of useful therapeutic and diagnostic proteins and industrial enzymes that can be modified to comprise two or more redox active amino acids (see paragraphs **0170**, **0172** and **0173**). No attempt is made to provide all sequences or even identify all known proteins that can be modified to contain redox active amino acids. DNA and protein sequence repositories are widely known in the art and are readily obtainable, for example as taught in the specification, from GenBank, EMBL, DDBJ and the NCBI (see paragraphs **0169** and **0174**). One of ordinary skill in the art readily recognizes that GenBank keyword searches on the National Center for Biotechnology Information (NCBI) BLAST website or searches of the published scientific literature using NCBI PubMed will readily reveal the nucleotide and amino acid sequences of countless genes of medical and industrial value. Providing the sequences of these proteins in the specification is not necessary to meet the requirements of 35 U.S.C. § 112, second paragraph because it is understood that the sequences referred to in claim 33 can be readily obtained from public sources (as taught in the specification). Applicants respectfully request withdrawal of the rejection.

In the Office Action, the Examiner rejected claim 42 under 35 U.S.C. § 112, second paragraph as indefinite for an alleged lack of clarity for the expression “improved oxidation.” Applicants respectfully disagree, and traverse the rejection.

Regardless, solely for the purpose of advancing the prosecution of the present application, and without acquiescing to the Examiner’s rejection, the Applicants have amended claim 42. Rebuttal to the Examiner’s rejection is made in view of the amended form of claim 42. Amended claim 42 replaces the expression “improved oxidation” with the

expression "shift in reductive peak potential as measured by voltammetric response in comparison to a corresponding protein that lacks said at least two redox active amino acids." Clear support for this language is found at paragraph **0188**. Use of this language removes any ambiguity that may have existed in the originally filed version of the claim. In view of amended claim 42, Applicants respectfully request withdrawal of the rejection.

35 U.S.C. §102

Alfonta *et al.* is Not Prior Art

In the Office Action, the Examiner rejected claims 31, 33, 34 and 39-44 under 35 U.S.C. §102(a) as allegedly anticipated by (or obvious over) Alfonta *et al.* "Site Specific Incorporation of a Redox-Active Amino Acid into Proteins," *Journal of the American Chemical Society* 125:14662-14663 (published November 6, 2003).

It appears that the Examiner may have made an error in citing Alfonta *et al.* Applicants point out that the present utility application claims priority to Prov. Appl. Serial No. 60/511,532, which has a filing date of October 14, 2003. Thus, Alfonta *et al.* is not prior art. The claimed invention is fully supported by the provisional application that was filed prior to the publication of Alfonta *et al.* Applicants assert that Alfonta *et al.* is not prior art, and respectfully request its removal from consideration.

The Claims Require a Plurality of Redox Active Amino Acids

In the Office Action, claims 31 and 33-44 were rejected under 35 U.S.C. §102(e) as allegedly anticipated by Schultz *et al.*, U.S. Patent No. 7,045,337.

As an initial matter, to clarify the record in light of statements in the Action, Applicants point out that U.S. Patent No. 7,045,337 and the subject application do not have the same assignee. 7,045,337 is assigned to The Scripps Research Institute and also to The Regents of the University of California. The subject application is solely assigned to The Scripps Research Institute.

In the rejection over the '337 patent, the Examiner argued that the claims are allegedly anticipated "as evidenced by Rodriguez" (see the Office Action at page 5, last line on the page). It is unclear whether an anticipation or obviousness rejection is intended. In a separate basis for rejection, the Examiner rejected claims 31, 33 and 39-44 under 35 U.S.C. §102(b) as allegedly anticipated by Rodriguez *et al.*, "The Reciprocal Exclusion by L-DOPA

(3,4-hydroxy-L-phenylalanine) and L-Tyrosine of the Incorporation as Single Units into a Soluble Rat Brain Protein," *Biochemistry Journal* 149:115-121 (1975).

Applicants respectfully traverse these rejections, to the extent that they are applied to the amended claims. Solely for the purpose of advancing the prosecution, and without acquiescing to the rejection, Applicants have amended claim 31. Rebuttal to the rejections is made in view of the amended form of claim 31.

The amended version of independent claim 31 now requires that a protein of the invention comprise *two or more* redox active amino acids. This limitation was previously recited in dependent claim 37, which is now cancelled and incorporated into claim 31. Amendments to dependent claims 35, 36, 38 and 43 revised the language to reflect proper antecedent basis consistent with the amended independent claim 31. The amendment to claim 35 also clarifies that the protein can comprise additional unnatural amino acids that are not redox active amino acids (see paragraphs **0059**, **0089**, **0118** and **0168**).

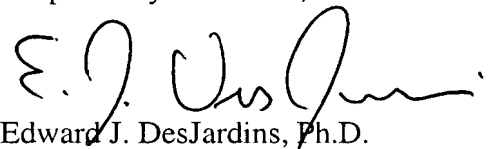
In order for a reference to anticipate a claim, or for a combination of references to render the claim obvious, the reference(s) must teach each and every element of the claim. The Examiner has not established how the prior art teaches a protein with two or more 3,4-dihydroxy-L-phenylalanine (DHP), 3,4,5-trihydroxy-L-phenylalanine, 3-nitro-tyrosine, 4-nitro-phenylalanine, or 3-thiol-tyrosine, or how the prior art provides the additional features of the dependent claims. Accordingly, a prima facie case has not been made and Applicants respectfully request that these rejections be withdrawn.

CONCLUSION

In view of the foregoing, Applicants believe that all claims now pending in this application are definite, novel and non-obvious, and are in condition for allowance. The issuance of a formal Notice of Allowance is respectfully requested.

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Respectfully submitted,



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Appl. No. 10/575,991

Response to Office Action dated March 26, 2007

Attachments:

- 1) a transmittal sheet;
- 2) a fee transmittal sheet;
- 3) petition for three months extension; and
- 4) a receipt acknowledgement postcard.